



White Paper

Protecting Onboard Video Data in Severe Collisions

Significant shock, impact, collision or fire can cause power loss, resulting in a loss of onboard video data. An Uninterruptable Power Supply (UPS) minimizes the risk of video loss in these types of incidents. This white paper explores situations that may put video at risk and a method to prevent loss of data.

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Introduction

Equipment used in mobile applications is susceptible to damage caused by collisions, power fluctuations and loss, shock, vibration and temperature extremes. Equipment should be ruggedized and specifically designed to withstand the rigors of mobile applications to ensure reliability. In some applications, additional protection is recommended to provide on-going performance in the event of a vehicle power loss.

A UPS is a standard component of data center and sophisticated IT infrastructure. Used to maintain power in the event of an outage, a UPS is typically connected to a server or workstation and allows the user adequate time to safely store data before shutting down. It can also provide backup power for a period of time in order to continue operating. A UPS serves the same purpose in mobile applications, in an environment where power fluctuations and additional factors are more likely to put systems at greater risk.

Anticipating Potential Power Loss

The RoadRunner™ DVR (Digital Video Recorder) withstands most collisions and records reliably in most incidents. Purpose-built for rugged performance in mobile applications, the DVR is Mil-Spec and SAE rated for reliability against shock and vibration. In addition, peripherals are individually fuse-protected so any impact that occurs directly destroying a component will not adversely affect the DVR. Even with these protective measures, there are situations whereby power loss is a potential. During a significant collision, disruptions in the electrical systems can be caused by:

- Direct impact to the vehicle battery or damage/severed vehicle power system
- Disruptions by electrical shorts and power fluctuations
- Damage to devices powered by the DVR

In any of these instances, the short period of time in which power is lost can cause the DVR to re-boot and lose a small portion of video. The video loss occurs when the DVR is not powered long enough for the video data cache to be adequately stored to the recording media. Because this video loss is most likely to occur in a catastrophic event – when video

data is the most critical, it is important to protect the onboard video system to ensure the most pertinent video evidence is safe. A UPS will help protect the video and audio recording in the seconds or minutes leading up to a collision.



Uninterruptible Power Supply

Apollo Video Technology's Uninterruptible Power Supply (Model No. RR-UPS-S) is a backup power supply designed specifically for mobile applications. Using supercapacitors, the UPS has an advantage over standard UPS battery technology with long-term reliability and ideal for short-term, high power output. Additionally, supercapacitors are lightweight and environmentally friendly. Unlike lead acid technology, which requires regular testing as they are prone to degradation over time, supercapacitors provide reliable protection and are virtually maintenance-free.

The RR-UPS-S supplies power to the DVR in the event of a power loss, allowing the DVR to store pertinent video data and perform a safe shutdown.

The UPS is designed to work with Apollo Video Technology's RoadRunner DVR, but is perfectly suited for any vehicle application where short-term backup power is needed. If vehicle power loss occurs, the UPS will obtain power stored from the internal supercapacitors, providing 12V backup power with current up to 8A. This allows the DVR and/or other onboard equipment to continue to operate during short power interruptions. During long power interruption, the UPS provides power allowing adequate time to perform a safe shutdown and store critical data to permanent memory.

In addition, the UPS provides a secondary, regulated 12V output for an auxiliary device that is not designed for direct vehicle power connection. The auxiliary output provides 12 VDC while in normal vehicle power mode. When vehicle power fails, the auxiliary output can be configured to either cut off power immediately for non-critical devices or provide backup power to an auxiliary device.

Conclusion

The reliability and ruggedness of the onboard equipment is vital to maintaining integrity during a collision or an event impacting power. The RoadRunner DVR is Mil-Spec and SAE rated, providing a system infrastructure that is protected against shocks, impacts and vibrations, allowing for data recovery even in the most severe collisions. Equipping a system with a UPS provides ultimate protection, so users can be assured that the system will continue recording and saving critical data surrounding collisions – even in the event of total vehicle power failure.



*View an actual video clip of the
RoadRunner system operating
in a collision without the use of
an uninterruptible power supply:
<http://vimeo.com/70487864>*

About Apollo Video Technology

Apollo Video Technology is a leading manufacturer of video surveillance and fleet management solutions for public transit, rail, school transportation, law enforcement, military, commercial transportation, fire and EMS applications. With public and private-sector installations throughout North America and worldwide, the RoadRunner™ mobile video and audio recording system provides exceptional video quality with management software optimized for wireless downloading and live video streaming.

Renowned for reliability, durability and ease of use, Apollo Video's solutions improve accessibility of data and deliver streamlined, fleet-wide management of video surveillance and on-board equipment to reduce liability, mitigate risk, improve efficiency and reduce maintenance and operating costs. Apollo Video is unique in the industry with software interoperability and compatibility across multiple generations of hardware.

In 2011, Apollo Video was named the No. 1 supplier of transit bus mobile video surveillance equipment in the Americas*- an achievement that further supports the company's commitment to offer its customers superior, compatible solutions throughout the lifetime of their fleet. Since its release in 2004, Apollo Video has supplied the RoadRunner system to over 340 agencies worldwide, representing over 17,000 total implementations.

** 2011 edition of IMS World Market Report for Mobile Video Surveillance Equipment
(www.imsresearch.com)*